.D. 1884. JAN. 1. N° 147.
ROPHY'S COMPLETE SPECIFICATION.

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Plates e prevent formation of lime deposits on coil. or pipes a by causing a strong current of water to flow just above the pipes thereby keeping the deposits washed off

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FIG. 1.

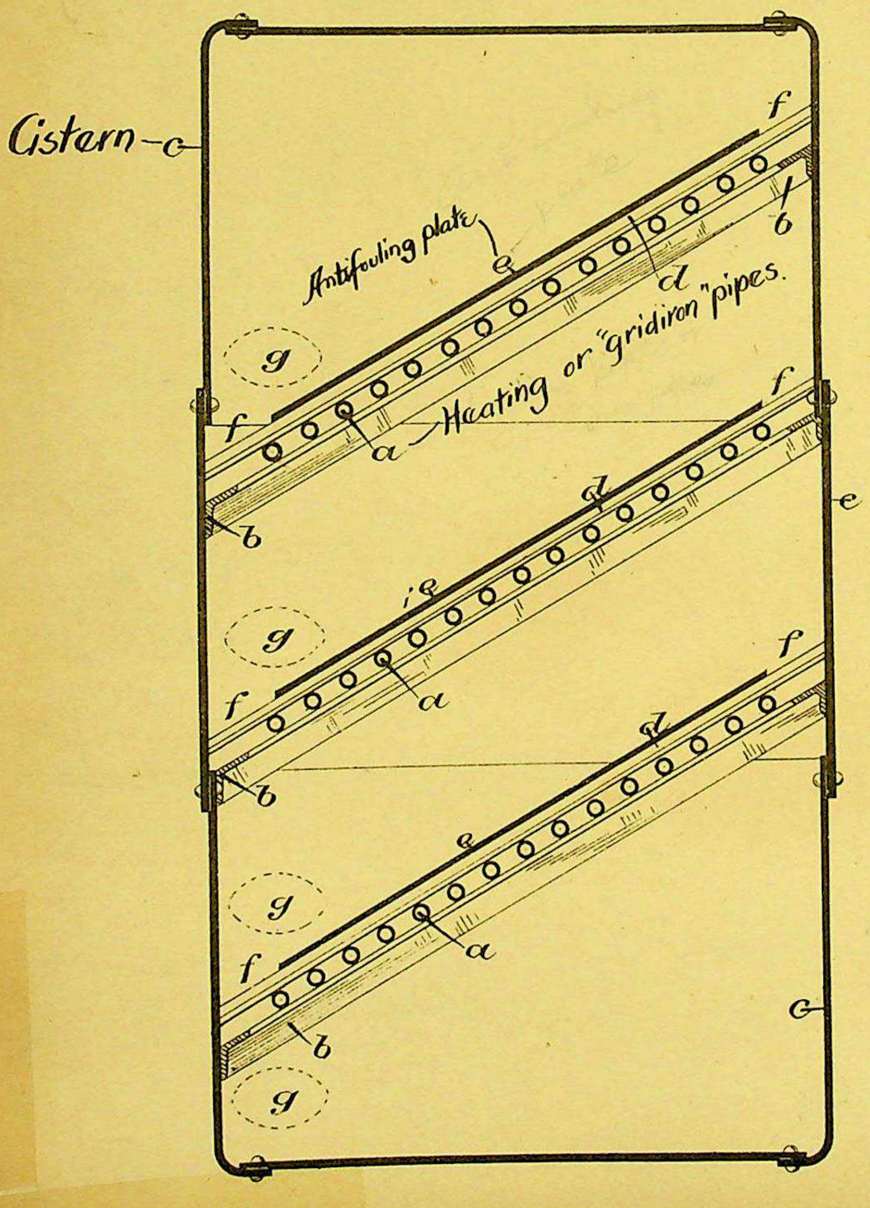


FIG. 2.

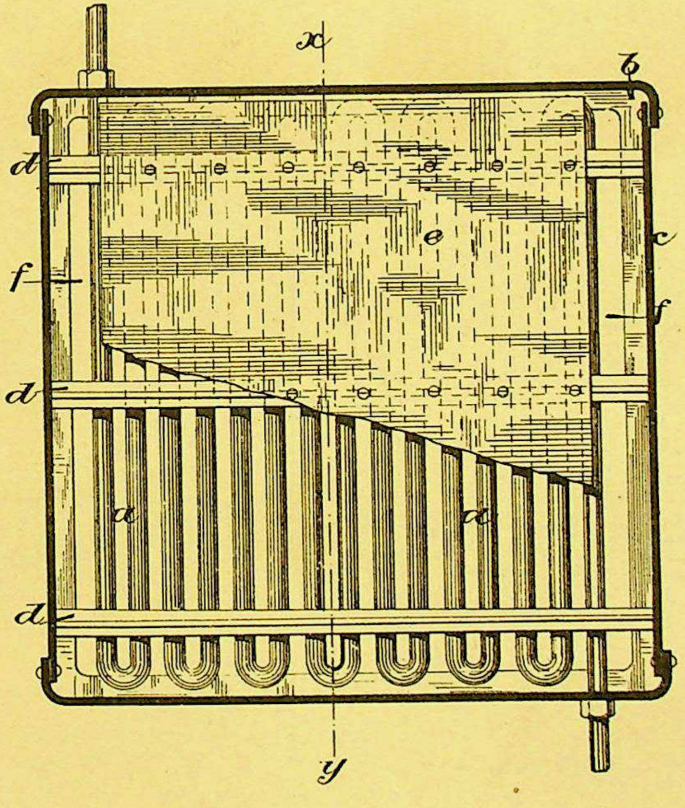
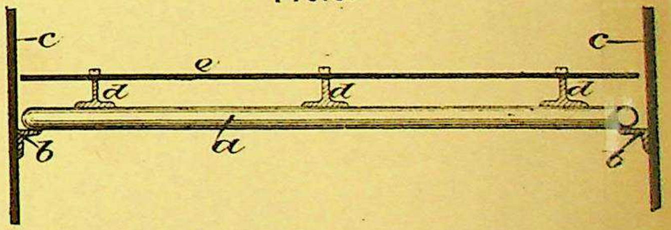


FIG. 3.



Steam Boilers

A.D. 1884, 1st *January*. N° 147.

Improved Water Heating Apparatus.

PROVISIONAL SPECIFICATION.

I, Michael Mary Brophy, of the firm of James Slater & Co., Holborn Engineering Works, in the County of Middlesex Mechanical Engineer, do hereby declare the nature of said Invention for Improved Water Heating Apparatus to be as follows:—

This Invention has for its object an improved water heating apparatus.

My Invention consists in fixing a plate of metal, or other material, at an angle, a short distance above a traversing grid-iron pipe or pipes, and parellel thereto, in the cistern of water required to be heated.

By this means a current of water is established on the under side of the plate, and consequently any deposit on the top of the pipe or pipes would be washed off by such current, and would fall to the bottom, when it could be blown off at any time as desired. One or more of these may be mounted in a cistern or tank, in series, and determined by their size.

Dated this 1st day of January 1884.

MICHAEL MARY BROPHY.
By Phillips & Leigh,
Patent Agents,
22, Southampton Buildings, W.C.,
Agents for the Applicant.

[*Price* 6*d.*]

COMPLETE SPECIFICATION.

I, Michael Mary Brophy, of the firm of James Slater & C°, Holborn Engineering Works, in the County of Middlesex, Mechanical Engineer, do hereby declare the nature of my Invention for "Improved Water Heating Apparatus," and in what manner the same is to be performed to be particularly described and ascertained in and by the following statement:—

This Invention has for its object an improvement in water heating apparatus, as at present constructed, and relates more particularly to that class in which the body of water to be heated, is traversed, at a given level, by a gridiron, or similarly closely articulated pipe, through which the heating medium flows.

The aim of my improvement is to prevent the accretion of the lime and similar matters always present in hard water, and deposited therefrom when the water is heated, from interfering with the practical utility of the grid.

It is matter of common experience that when a grid-iron heating pipe, fixed at the bottom of a cistern, has been in use for any length of time, the lime deposit, resulting from the hardness of the water in the cistern, settles upon the grid, and gradually buries it, thus rendering it inoperative as a heating agent.

And when the gridiron pipe has been fixed higher up, say at a distance of a foot or two feet from the bottom of the cistern, the process of deposition soon sets in, forming ridges of deposit upon the tops of the pipes. These ridges get higher and wider until they touch each other, and form a solid slab, effectually preventing circulation of the water between the pipes of the grid, and, consequently, materially interfering with its heating power.

My improvement consists in fixing the grid in an inclined position, at any convenient level in the cistern, where it is supported in any convenient way. Across the grid, and resting upon it, but at right angles with the lines of tube forming it, I fix bars of iron, preferably of a **T** section, and upon these I fix a plate of iron (or other suitable material), leaving a suitable space between its top and bottom edges and the adjacent sides of the cistern, for the circulation of the water.

I do not confine myself to a single grid, with its anti-fouling baffle plate, as, according to my Invention, I may use as many as may be found convenient.

In order that my Invention, and the means of putting the same into successful operation, may be thoroughly understood, I will now proceed to describe the same. Reference is to be had to the accompanying Drawings, forming a part of this Specification, in which the same letter of reference is used, throughout the Figures, to indicate corresponding parts.

Figure 1 is a sectional elevation.

Figure 2 is a plan of the same.

Figure 3 is a transverse section, taken at the line *x*—*y* on Figure 2.

The gridiron pipes, *a*, *a*, *a*, to which the heating medium is supplied in any convenient and suitable way, are carried by angle irons, *b*, *b*, *b*, rivetted to the sides of the cistern, *c*.

Across each grid, and at right angles with it, I fix a series of bars, *d*, *d*, *d*, preferably of a **T** section. Upon the top of these I fix an antifouling baffle plate, *e*. These bars and plate may be simply rivetted together and laid upon the grid, being kept in position by stops depending from the tee bars, or the ends of the bars may be secured to the opposite sides of the cistern. Spaces, *f*, *f*, are left between the top and bottom edges of the antifouling baffle plates, *e*, *e*, *e*, and the adjacent sides of the cistern, *c*. The plates, *e*, *e*, *e*, are preferably flat, but may be corrugated in the direction of the incline.

The action of my improved heating apparatus is as follows.

As soon as the temperature of the water, in contact with a grid, begins to rise, the water naturally rises also, the formation of deposit commencing when the water is hotter, and the circulation accelerated. As the hottest water is always nearest the grid, it is here that the circulation will be the most vigorous, and the formation of deposit, the greatest. But the ascending currents of water are compelled by the plates, *e*, *e*, *e*, to flow over the grid, washing off the particles of deposit, which fall upon the top of the next plate below, or upon the bottom of the cistern, from which levels the accumulated sludge is removed in the usual way at the doors, *g*, *g*, *g*.

Having now particularly described and ascertained the nature of my said Invention, and in what manner the same is to be performed, I declare that what I claim is:—

In a water heating apparatus of the herein described type, the use of an inclined grid iron, or equivalent, pipe, in combination with an antifouling baffle plate, for the purpose of maintaining a current of water under the plate to clean the pipes, substantially as herein described with reference to the accompanying Drawings.

Dated this 16th day of September 1884.

Agents for the Applicant.
PHILLIPS & LEIGH,
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